

WHAT IS CLAIMED IS:

1. An optical recording method for recording information in an optical recording medium comprising a grooved light-transparent substrate and a phase change recording layer thereon, by irradiating a laser beam thereto through an objective lens in an optical system, wherein
the recording is carried out in the grooves under the conditions:
10 $0.48 \leq P_r/(\lambda/NA) \leq 0.74$ and $P_r \leq 0.50 \mu\text{m}$,
provided that the laser beam used for recording has a wavelength λ , the objective lens has a numerical aperture NA, and recording tracks are arranged at a pitch P_r .
- 15 2. The optical recording method of claim 1 wherein the medium is operated at a linear velocity of at least 4.5 m/s.
3. The optical recording method of claim 1 wherein the
20 recording forms a recorded mark having at least one end extending out of the groove.
4. The optical recording method of claim 1 wherein said optical recording medium includes the recording layer, a
25 dielectric layer, and a reflective layer stacked on the light-transparent substrate in the described order,
the reflective layer has a thermal conductivity of at least 100 W/mK, and the dielectric layer has a thermal conductivity of at least 1 W/mK.
- 30 5. An optical recording method for recording information in an optical recording medium comprising a grooved light-transparent substrate and a phase change recording layer thereon, by irradiating a laser beam thereto through an
35 objective lens in an optical system, wherein
the recording is carried out in the groove under the

condition:

$$0.48 \leq P_T/(\lambda/NA) \leq 0.68,$$

provided that the laser beam used for recording has a wavelength λ , the objective lens has a numerical aperture
5 NA, and recording tracks are arranged at a pitch P_T .

6. The optical recording method of claim 5 wherein the recording forms a recorded mark having at least one end extending out of the groove.

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7. The optical recording method of claim 5 wherein said optical recording medium includes the recording layer, a dielectric layer, and a reflective layer stacked on the light-transparent substrate in the described order,

15 the reflective layer has a thermal conductivity of at least 100 W/mK, and the dielectric layer has a thermal conductivity of at least 1 W/mK.

8. An optical recording medium in which recording is
20 carried out by the method of claim 1.

9. An optical recording medium in which recording is carried out by the method of claim 5.